Remarks

The Applicants respectfully request reconsideration in view of the foregoing amendments and following remarks.

I. The Applicants should be charged a 1 (not 3) month extension fee for this reply.

The Office action set a shortened statutory period for reply of one month. Office action, page 1. The Office action makes objections and rejections of the claims, however. The Office action is an action on the merits, and the shortened statutory period of reply should be 3 months "[t]o reply to any Office action on the merits." MPEP 710.02(b).

The Applicants request that extension fees for replying to the Office action be calculated from August 25, 2007. The Applicants should be charged a one-month extension fee for responding to the Office action, not a three-month extension fee.

II. The Applicants confirm their provisional election without traverse.

In the Office action, the Examiner describes a four-way restriction requirement. Office action, pages 2-3. The Applicants previously elected the claims of group IV without traverse. Although the Applicants respectfully disagree with the Examiner's characterizations of the claims, the Applicants hereby confirm the election of the claims of group IV (claims 41-76) without traverse.

The Applicants have canceled claims 1-40 and 77-81 without prejudice.

III. Claims 48-56 should be allowable.

In the Office action, the Examiner objects that the term "pass signature" in claims 48-56 is unclear. Office action, page 3. The Applicants respectfully disagree but have amended claim 48 to expedite prosecution. Claim 48, as amended, recites:

> in a first pass, computing a first pass signature for each of one or more portions of media data and encoding the one or more portions, wherein the first pass signature for each of the one or more portions comprises a value derived from input of the portion; and
>
> in a second pass,
>
> computing a second pass signature for a given portion of the one or more portions, wherein the second pass signature for the given portion comprises a value derived from input of the given portion;

comparing the second pass signature with the first pass signature for the given portion so as to check that the input for the given portion is consistent between the first pass and the second pass.

The application as filed supports the added language at, for example, pages 64-66. The Applicants believe the Examiner's objection to the term "pass signature" to be moot. The Office action makes no prior art-based rejections of claims 48-56.

Claims 48-56 should be allowable. Such action is respectfully requested.

IV. Claims 41-43, 45-47 and 57-71 should be allowable.

In the Office action, the Examiner rejects claims 41-43, 45, 46 and 57-71 under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 5,650,860 to Uz et al. ("Uz"). Office action, pages 4-6. The Examiner rejects claims 66 and 70 under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 6,421,739 to Holiday ("Holiday"). Office action, page 6. The Applicants respectfully disagree with the rejections. The Examiner does not specifically address dependent claims 47 and 72-76.

A. Uz.

In the interest of reaching a shared understanding of the disclosure of Uz, the Applicants make the following observations.

Uz describes a "variable bit rate, non-real time, multi-pass encoding algorithm" in connection with Figure 8. Uz, 20:66-67. In a first pass, the encoder determines a number of bits B_i for each frame i in an input sequence of frames when (a) a rate control quantization scale factor is fixed (not dependent on virtual buffer fullness) and (b) the fixed rate control quantization scale factor is multiplied by a variable masking activity quantization scale factor for each macroblock in a frame. Uz, 21:2-12; *see also* 5:5-10.

The total number of bits B_{Total} for all frames in the sequence is computed from the B_i counts for the frames. Uz, 21:13-20. The encoder also determines the total number of discretionary bits, taking out overhead bits Z for the frames. Uz, 21:21-29. A scale factor is computed, then a bit budget B_i' per frame i is determined from the overhead bits Z_i and scaled discretionary bits for the frame i. Uz, 21:30-40.

The bit budgets B_i' (or BB_i) can be further modified depending on maximum channel rate R_{max} or feedback from encoding in a second pass. Uz, 21:40-22:60.

B. Claims 41-43, 45-47 and 57-65.

Claim 41, as amended, recites, "storing auxiliary information from the encoding in the first pass, wherein the stored auxiliary information is side information to be output in a bitstream and used in decoding" and "in a second pass, encoding the media data, including using the stored auxiliary information to increase speed of the encoding in the second pass."

According to claim 41, a tool such as an encoder encodes media data in a first pass. The tool stores auxiliary information from the encoding in the first pass. The stored auxiliary information is side information (e.g., mask values, tile configurations, multi-channel transforms) that is to be output in a bitstream (e.g., by a multiplexer) and used in decoding (e.g., in inverse quantization, tile configuration or inverse multi-channel transforms). In a second pass, the tool encodes the media data and uses the stored auxiliary information to increase speed of the encoding in the second pass. For example, the tool uses stored mask values from the first pass instead of computing new mask values, which saves time, or the tool uses stored tile configurations and/or multi-channel transforms instead of computing new ones, which saves time.

Each of claims 57 and 61, as amended, recites, "storing auxiliary information from the encoding in the first pass, wherein the stored auxiliary information is side information to be output in a bitstream and used in decoding" and "wherein the stored auxiliary information is used to increase speed of the encoding in the second pass."

Uz does not teach or suggest the above-cited language of claims 41, 57 and 61, respectively. According to Uz, an encoder determines bit budget values using results of first pass encoding, then it uses the bit budget values to regulate quality and rate during second pass encoding. Uz, 21:2-39. The bit budget values in Uz are used by the encoder to constrain encoding operations. The bit budget values in Uz are not "side information to be output in a bitstream," nor are they "side information to be ... used in decoding," as recited in claims 41, 57 and 61, respectively. Moreover, the bit budget values in Uz do not "increase speed of the encoding in the second pass" as recited in claims 41, 57 and 61, respectively. If anything, additional second pass constraints on quality and bit rate (as in Uz) would slow down encoding

in the second pass. Using bit budget values to constrain subsequent encoding (as in Uz) is different than, and leads away from, the above-cited language of claims 41, 57 and 61, respectively.

Claims 41, 57 and 61 should be allowable. Such action is respectfully requested.

In view of the foregoing comments, the Applicants will not belabor the merits of the separate patentability of dependent claims 42, 43, 45-47, 58-60 and 62-65. These dependent claims should be allowable. Such action is respectfully requested.

C. Claims 66-74 and 76.

Claim 66, as amended, recites, "setting a checkpoint at a defined percentage of a target total bit count for the media data, wherein the checkpoint is defined in terms of cumulative bit count in encoding of the media data" and "in a second pass, encoding media data, wherein the encoding in the second pass includes checking results of the encoding in the second pass as of the checkpoint."

According to claim 66, a tool such as an encoder encodes media data in a first pass. The tool processes results of the encoding in the first pass, setting a checkpoint at a defined percentage of a target total bit count for the media data. The checkpoint is defined in terms of cumulative bit count in encoding of the media data. For example, the target total bit count is x bits, and the checkpoint is 10%, or 25%, etc. of the x bits. In a second pass, the tool encodes the media data, checking results of the encoding as of the checkpoint. The application describes example implementations that use checkpoints, for example:

> Since the two-pass VBR control strategy is based on modeling of the complexity of the input, there are inevitably some inaccuracies in the predictions of the number of bits to be produced. Thus, the encoder uses checkpoints to serve as points in the timeline when adjustments can be made to the control parameters.

Application, page 60.

Claim 71, as amended, recites, "setting a checkpoint for encoding in a second pass, wherein the checkpoint is defined in terms of cumulative bit count in encoding of the media data."

Uz does not teach or suggest the above-cited language of claims 66 and 71, respectively. According to Uz, a bit budget B_i' (or BB_i) for a frame i is set after a first pass then used (and

possibly updated) in a second pass. Uz, 21:30-22:60. The bit budget is a bit count value set per frame. Using a per-frame bit budget (as in Uz) is different than, and leads away from, using a checkpoint "defined in terms of cumulative bit count in encoding of the media data," as recited in claims 66 and 71, respectively.

Holiday also fails to teach or suggest the above-cited language of claims 66 and 71, respectively. Holiday describes a Java virtual machine ("JVM") "with support for fault tolerance by using information maintained by the first JVM to checkpoint objects that are created, modified, and/or deleted during the process of responding to an event of a transaction." Holiday, Abstract. Holiday does not address media encoding, nor does it address multi-pass media encoding. Holiday is even further from teaching or suggesting the above-cited language of claims 66 and 71, respectively.

Claims 66 and 71 should be allowable. Such action is respectfully requested.

In view of the foregoing comments, the Applicants will not belabor the merits of the separate patentability of dependent claims 67-70, 72-74 and 76. These dependent claims should be allowable. Such action is respectfully requested.

D. Claim 75.

The Examiner indicates claims 72-76 are rejected (Office action, page 1) but details no prior art rejections of these claims. The Applicants have rewritten claim 75 in independent form. Claim 75 should be allowable. Such action is respectfully requested.

V. Claim 44 should be allowable.

In the Office action, the Examiner rejects claim 44 under 35 U.S.C. § 103(a) as being unpatentable over Uz in view of "Official Notice that one of ordinary skill in the art would know that tile configurations can contain auxiliary information." Office action, page 6. The Applicants respectfully disagree.

Claim 44 depends from claim 41 and includes the language of claim 41. As noted above, Uz fails to teach or suggest the above-cited language of claim 41. The "Official Notice" statement from the Examiner, taken separately or together with Uz, also fails to teach or suggest the above-cited language of claim 41.

Claim 44 should be allowable. Such action is respectfully requested.

VI. Claims 82-85 should be allowable.

The Applicants have added dependent claims 82-85, each of which depends directly or indirectly from independent claim 66 or 71. Dependent claims 82-85 are supported by the application as filed at, for example, pages 60-62. The Applicants will not belabor the merits of the separate patentability of dependent claims 82-85. These dependent claims should be allowable. Such action is respectfully requested.

VII. Conclusion and Request for Interview.

Pending claims 44-76 and 82-85 should be allowable. Such action is respectfully requested.

If any issues remain, the Examiner is formally requested to contact the undersigned attorney in order to arrange a telephonic interview. This request is being submitted under M.P.E.P. § 713.01, which indicates that an interview may be arranged in advance by a written request.

Respectfully submitted,

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